

ABOUT TO BUY THAT SPECIAL SEAL A DIAMOND COATING?

Synthetic Diamond Coatings do not look like this...



They look like this...



A human hair
(x100 magnification)

A 10 micron thick diamond coating
(also x100 magnification)

‘So thin that they are invisible to the naked eye’

“Immune”, “Forever”, “No Wear”

What Do You Believe?

- The sky is not always blue
- Grass is not always green
- Pigs can fly
- Diamond coatings are immune to dry running
- Diamond coatings are forever
- Diamond coatings don't wear

Synthetic Diamond Coatings (SDC) are currently being applied to mechanical seal faces across the sealing industry.

Extraordinary claims are then being broadcast around the globe about how wonderful these coatings are and they are certainly expensive enough that they should solve application problems.



Immune to Dry Running!?

This Statement is False!

Definition of Immune: “protected or exempt, especially from an obligation or the effects of something”.

- Competitors Diamond Coated Single Seal - **Not IMMUNE**
- AESSEAL® Diamond Coated Single Seal - **Not IMMUNE**

Coated or uncoated seals will heat up and fail after a short period of dry running.



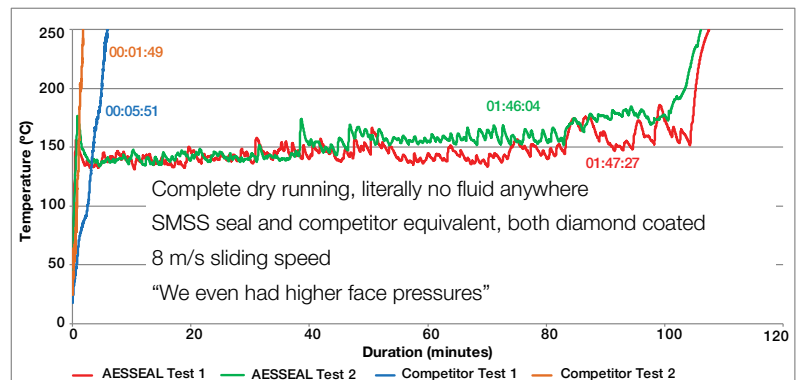
SMSS™
Single Monolithic Stationary Seal

Synthetic Diamond Coatings Do Not Wear?

SDC is typically a 10 micron (10µm) thick coating and as with all coatings they wear. To be safe the Synthetic Diamond Coating should be ignored when making a risk assessment, as the coatings are so thin that there is almost certainly going to be a time when there is no coating left.

DIAMONDS ARE NOT FOREVER

The Brilliance of Clarity



Rock Hard Evidence

Above is clear evidence that all diamond coated seals are not immune to dry running. Most failed within 6 minutes, some lasted longer at 1 hour 47 minutes... but do not be fooled all diamond coated seals are not immune to dry running.

Scientific Paper

AESSEAL® employed the skills of a third party expert and commissioned testing to enable the writing of a peer reviewed scientific research paper. Hard evidence on whether diamond coated faces were good, bad, or indifferent in a dry running application were rigorously evaluated. This is presented in the published document.

**Journal of Coating Science and Technology 2016 Volume 3 No.1
‘Are diamond coatings immune to dry running?’ by Michael Seymour**

We encourage our customers to [read this paper](#) and delve deeper to get a better understanding of this technology.



AESSEAL has Synthetic Diamond Coatings available for the following single seals:

- SMSS™
- CAPI™ A Single

CAPI™ A Single

SOME ARE FOR 1 MINUTE 49 SECONDS

Synthetic Diamond Coatings – Buyer Beware!



It is my opinion that no Synthetic Diamond Coating is suitable for wide-spread use in mechanical seals.

That opinion is based upon 30 years experience in the industry and the extremely high selling price, which is not necessarily a reflection of the cost price, for most seals that have been coated with these materials.

It is also my opinion that on an application specific basis one or more of these coatings could make a difference to mechanical seal performance which could justify the often extremely high price of the Synthetic Diamond Coating.

I also hold the view, that it would be almost impossible to scientifically prove in most applications whether or not the application of Synthetic Diamond Coatings was a significant contributor to acceptable or improved performance.

I admit to a personal dislike, based upon experience, of any coating when applied to mechanical seals.

On the other hand Synthetic Diamond Coatings are so thin that even if the coating detaches from the substrate there may be no noticeable deterioration in performance when the hard / hard faces operate without the coating. Equally there may be no improvement in performance in many applications when the thin SDC coating is intact and the seal is operating with a normal fluid film.

Although they have been applied in mechanical seal faces for many years, for all of the above reasons the AESSEAL® Group of Companies are conservative about the application of any Synthetic Diamond Coating.

Some Facts about Synthetic Diamond Coatings

It is a scientific fact that “diamonds”, when applied to mechanical seals, are not forever (as the thin coating wears) and that no Synthetic Diamond Coated mechanical seal is immune to dry running conditions.



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AESSEAL plc is certified to:

ISO 9001, ISO 14001, ISO/IEC 20000, ISO/IEC 27001,
ISO/TS 29001, ISO 37001, ISO 45001 & ISO 50001



Net Zero champions globally



Use double mechanical seals with hazardous products.

Always take safety precautions:

- Guard your equipment
- Wear protective clothing



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